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shington, D.C., U.S.A.

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The removal of FAO headquarters from Washington, D.C., U.S.A. to Rome, Italy, will take place during the months of February, March, and April 1951. In consequence, the January-February issue of the Fisheries Bulletin *will be combined with the March-April issue and will be published from the new headquarters: Food and Agriculture Organization of the United Nations, Viale delle Terme di Caracalla, Rome, Italy.*

FOOD AND AGRICULTURE ORGANIZATION
OF THE UNITED NATIONS
WASHINGTON, D.C., U.S.A.

Economic Notes

CURRENT STATISTICS ON WORLD LANDINGS AND TRADE

A comparison of 1949 and 1950 landings on a partial year basis shows a slight over-all increase in 1950 for the nine countries listed in Table 13. Since these countries accounted for an appreciable percentage of world landings in 1949, this increase is likely to be somewhat indicative of world development in 1950.

The trade tables give imports and exports of fisheries products arranged by commodity groups for the years 1938 and 1946-49 and also a comparison of 1949 and 1950 data on a partial year basis. Table 14 covers five importing countries. Table 15, which lists nine exporting countries, is essentially a revision of Table 12 (Vol. III, No. 5, p. 101): It gives more up-to-date information for 1950 and contains figures for Canadian exports of aquatic mammal oils and fats.

Table 13.- Landings for Nine Countries, Partial Year 1950 Compared with Same Period in 1949

Country	Partial year a/			1950 as percentage of 1949
	Period covered	1949	1950	
		(. . . . Metric tons b/ . . . . .)		(Percent)
Denmark	Jan.-Sept.	178 500 c/	165 200 d/	93
Iceland	Jan.-Sept.	287 200	257 700	90
Ireland	Jan.-Aug.	7 100	6 000	85
Netherlands	Jan.-Aug.	98 100	96 700	99
Norway e/.	Jan.-June	680 400	900 300	132
Portugal.	Jan.-June	61 900	48 400	78
United Kingdom f/.	Jan.-Sept.	756 100	668 000	88
Canada (excl. Newfoundland). . . .	Jan.-Aug.	339 600	389 300	115
United States of America g/	Jan.-June	802 100	754 000	94
Total, above countries		3 211 000	3 285 600	102

a/ Information for 1950 received by November 1950.
b/ Reported (landed) weight unless otherwise indicated.
c/ Includes 13,345 tons landed directly in British harbors.
d/ Includes 6,701 tons landed directly in British harbors.
e/ Winter herring, spawning cod, and Finnmark cod only.
f/ Excludes Northern Ireland.
g/ Round fresh weight. Preliminary estimates.

Table 14.- Imports of Certain Fisheries Products by Five Importing Countries, 1938, 1946-49, and Latest Available Period of 1950 Compared with Same Period in 1949

Commodity and country	Calendar year					Partial year		
	1938	1946	1947	1948	1949	Period covered	1949	1950
	(Metric tons)						(Metric tons)	
Fish, fresh or frozen								
Denmark	14 293	1 749	5 180	10 029	17 817	Jan.-Aug.	11 365	16 604
Netherlands	4 394	2 433	4 550	4 672	2 575	Jan.-Aug.	1 739	4 339
Sweden	13 064	4 166	7 767	5 331	6 521	Jan.-June	2 673	3 197
United Kingdom	83 081	206 150	217 645	216 962	186 765	Jan.-Aug.	145 824	76 581
U.S.A.	54 276	115 353	106 961	117 155	109 871	Jan.-Mar.	22 023	25 461
Total	169 108	329 851	342 103	354 149	323 549		183 624	126 182
Fish, dried, salted, or smoked								
Denmark	9 030	5 242	11 235	8 923	6 218	Jan.-Aug.	3 095	1 232
Netherlands	3 254	1 211	2 585	1 234	548	Jan.-Aug.	249	542
Sweden	36 625	23 644	21 900	22 807	14 482	Jan.-June	2 926	2 101
United Kingdom	18 656	5 441	4 259	4 709	4 939	Jan.-Aug.	3 393	2 095
U.S.A.	44 480	55 581	38 665	44 396	44 366	Jan.-Mar.	9 977	12 031
Total	112 045	91 119	78 644	82 069	70 553		19 640	18 001
Fish, canned								
Denmark	429	62	79	139	469	Jan.-Aug.	314	185
Netherlands	4 019	1 040	97	138	248	Jan.-Aug.	70	555
Sweden a/	1 432	727	1 204	718	814	Jan.-June	398	512
United Kingdom	73 424	79 782	79 234	25 448	43 227	Jan.-Aug.	20 550	18 422
U.S.A. b/	21 097	20 770	15 404	21 801	20 825	Jan.-Mar.	7 059	7 726
Total	100 401	102 381	96 018	48 244	65 583		28 391	27 400
Crustaceans and mollusks								
Denmark	340	92	99	89	419	Jan.-Aug.	30	40
Netherlands c/	1 693	211	360	215	197	Jan.-Aug.	121	153
United Kingdom	13 712	4 072	5 750	6 584	9 476	Jan.-Aug.	6 149	3 104
U.S.A.	16 192	22 237	23 047	30 351	37 714	Jan.-Mar.	9 610	10 731
Total	31 937	26 612	29 256	37 239	47 806		15 910	14 028
Fish oils								
Denmark	11 287	1 373	2 608	3 138	3 811	Jan.-Aug.	2 468	4 578
Netherlands d/	74 170	8 052	19 200	17 126	13 349	Jan.-Aug.	4 197	19 798
Sweden	1 578	5 000	15 404	17 176	16 926	Jan.-June	10 881	8 444
United Kingdom	51 788	21 522	25 011	30 252	24 800	Jan.-Aug.	15 636	11 460
U.S.A.	35 349	14 264	9 424	19 674	17 489	Jan.-Mar.	3 017	5 340
Total	174 172	50 211	71 647	87 366	76 375		36 199	49 620
Fish meal and fertilizers								
Denmark	3 287	3 187	2 906	10 746	8 991	Jan.-Aug.	6 731	9 270
Netherlands	23 363	3 934	3 751	6 485	6 064	Jan.-Aug.	5 391	22 577
U.S.A.	36 677	9 392	8 345	38 740	48 300	Jan.-Mar.	13 937	12 070
Total	63 327	16 513	15 002	55 971	63 355		26 059	43 917
Aquatic mammal oils and fats								
Denmark	35 024	4 972	10 465	10 761	18 016	Jan.-Aug.	13 289	15 423
Sweden	22 209	3 636	5 872	6 771	11 423	Jan.-June	5 019	4 215
United Kingdom	229 311	67 973	147 921	124 425	139 792	Jan.-Aug.	120 994	161 653
U.S.A.	12 476	478	7 020	18 375	4 086	Jan.-Mar.	3 180	535
Total	299 020	77 059	171 278	160 332	173 317		142 482	181 826
Miscellaneous aquatic animal and plant products								
Denmark	819	505	1 003	1 028	1 244	Jan.-Aug.	1 005	2 513
Netherlands	193	610	949	720	900	Jan.-Aug.	675	479
United Kingdom	507	200	331	220	154	Jan.-Aug.	17	27
U.S.A.	14 701	11 357	9 176	10 839	10 411	Jan.-Mar.	2 026	2 304
Total	16 220	12 672	11 459	12 807	12 709		3 723	5 323

SOURCE: Official publications and special reports.

a/ Includes canned crustaceans and mollusks.
b/ Includes some fish and caviar, not canned.
c/ May include oysters and mussels for breeding, 1938 and 1946-48.
d/ Aquatic mammal oils and fats may be included with fish oils.

Table 15.- Exports of Certain Fisheries Products from Nine Exporting Countries, 1938, 1946-49, and Latest Available Period of 1950 Compared with Same Period in 1949

Commodity and country	Calendar year					Partial year		
	1938	1946	1947	1948	1949	Period covered	1949	1950
	(..... Metric tons .....)						(.... Metric tons ....)	
Fish, fresh or frozen								
Netherlands	20 700	6 438	12 807	13 427	20 543	Jan.-Aug.	8 901	7 128
Denmark	51 947	85 431	80 650	79 903	103 334	Jan.-Aug.	70 226	59 322
Iceland	17 430	96 745	87 621	151 781	156 442	Jan.-Sept.	122 183	36 467
United Kingdom	54 664	12 114	15 583	30 929	13 366	Jan.-Aug.	5 890	6 272
France	14 125	101	784	229	2 904	Jan.-May	567	653
Belgium	5 257	1 594	17 934	6 595	10 359	Jan.-July	9 123	2 500
Norway a/	120 167	80 787	136 034	182 830	181 775	Jan.-Aug.	168 195	83 213
Canada	49 871	106 630	92 218	96 380	92 599 b/	Jan.-Aug.	50 957 c/	68 283 c/
Total	334 161	389 840	443 631	562 074	581 322		436 042	263 838
Fish, salted, dried, or smoked								
Netherlands	76 741	14 869	48 816	48 937	51 652	Jan.-Aug.	30 448	27 607
Denmark	2 490	8 828	16 168	17 080	9 682	Jan.-Aug.	7 338	1 923
Iceland	80 248	27 842	35 287	28 549	30 548	Jan.-Sept.	17 403	26 834
United Kingdom	162 670	35 319	40 446	55 350	54 665	Jan.-Aug.	28 607	29 630
France	21 492	105	1 697	2 538	7 950	Jan.-May	2 224	5 457
Belgium	730 d/	5 353	3 276	1 412	783	Jan.-July	197	167
Norway a/	111 728	180 684	167 102	174 196	157 682	Jan.-Aug.	111 637	77 431
Canada	43 326	48 672	43 988	49 164	73 288 b/	Jan.-Aug.	51 253 c/	57 431 c/
Total	499 425	321 672	356 780	377 226	386 250		249 107	226 480
Fish, canned								
Netherlands	554	1 359	6 493	5 345	6 429	Jan.-Aug.	3 659	2 806
Denmark	384	250	1 484	2 405	5 070	Jan.-Aug.	2 988	4 686
Iceland	16	513	340	959	423	Jan.-Sept.	233	319
United Kingdom f/	4 969	3 748	4 991	5 455	7 548	Jan.-Aug.	4 493	6 720
Portugal e/	34 389	44 284	34 488	36 845	23 675	Jan.-Aug.	11 636	11 858
France	5 187	923	2 319	2 619	2 617	Jan.-May	1 223	1 054
Belgium	1 401 d/	141	460	394	768	Jan.-July	432	1 034
Norway a/	25 419	25 902	31 406	31 616	28 050	Jan.-Aug.	17 029	23 828
Canada	27 449	67 786	69 075	39 862	28 145 b/	Jan.-Aug.	13 081 c/	6 612 c/
Total	99 768	144 906	151 056	125 500	102 725		54 774	58 917
Crustaceans and mollusks								
Netherlands	46 118	25 376	46 589	44 133	45 681	Jan.-Aug.	18 866	16 005
Denmark	61	38	19	2 515	9 684	Jan.-Aug.	3 115	4 485
Iceland	62	2	-	-	-	Jan.-Sept.	-	-
France	8 872	3 273	3 362	2 392	3 969	Jan.-May	1 837	1 749
Belgium	3 622	46	ø	3	15	Jan.-July	4	91
Norway a/	3 410	1 438	4 219	3 866	3 188	Jan.-Aug.	1 498	2 469
Canada	9 008	11 507	9 803	11 285	12 652 b/	Jan.-Aug.	10 114 c/	11 221 c/
Total	71 153	41 680	63 992	64 194	75 189		35 434	36 020
Fish oils								
Netherlands g/	50 466	25	7 205	5 176	3 524	Jan.-Aug.	2 600	3 256
Denmark	871	199	392	1 155	1 256	Jan.-Aug.	827	2 522
Iceland	27 920	24 684	25 934	36 371	12 917	Jan.-Sept.	5 718	13 388
United Kingdom h/	11 100	4 291	4 272	6 549	6 697	Jan.-Aug.	3 609	4 760
Portugal	-	3 255	2 132	398	1 489	Jan.-Aug.	1 319	1 407
Norway a/	35 969	19 766	25 496	29 052	30 488	Jan.-Aug.	18 077	17 307
Canada	14 165	2 023	938	4 553	17 835 b/g/	Jan.-Aug.	5 222 c/	7 555 c/
Total	140 491	54 243	66 369	83 254	74 206		37 372	50 195
Fish meal and fertilizer								
Netherlands	942	125	1 262	2 412	1 255	Jan.-Aug.	951	1 318
Iceland	22 294	16 364	16 622	39 617	6 950	Jan.-Sept.	6 575	10 782
Belgium	206	-	-	-	537	Jan.-July	405	389
Norway a/	81 253	10 254	8 382	14 695	11 219	Jan.-Aug.	6 786	49 317
Canada	19 518	29	-	21 737	27 524 b/	Jan.-Aug.	19 614 c/	23 416 c/
Total	124 213	26 772	26 266	78 461	47 485		34 331	85 222
Aquatic mammal oils and fats								
Denmark	959	379	277	308	301	Jan.-Aug.	299	463
Iceland	843	3	-	773	2 499	Jan.-Sept.	1 611	1 507
Portugal	1 989	3 363	3 805	1 603	1 187	Jan.-Aug.	894	1 153
Norway a/	5 161	11 443	36 623	29 573	7 185	Jan.-Aug.	6 515	...
Canada	1 937	31	-	86	f/	Jan.-Aug.	1 342 c/	1 644 c/
Total	10 889	15 219	40 705	32 343	11 172		10 661	...

SOURCE: Official publications and special reports.

a/ Includes re-exports, 1938 and 1946-48.
b/ Includes Newfoundland beginning 1 April 1949.
c/ Includes Newfoundland 1 January-31 August.
d/ Includes some crustaceans and mollusks.
e/ Includes small quantities of fresh or dried fish.
f/ Includes canned crustaceans and mollusks.
g/ Aquatic mammal oils may be included with fish oils.
h/ Includes aquatic mammal oils and fats.

Developments

CONFERENCES AND MEETINGS

Meeting on Regulations and Standards for Fisheries Products. The Technological Branch of the Fisheries Division has completed its compilation of summaries of laws and regulations in effect in various countries regarding quality, containers, weights, and inspection of fisheries products. These will be embodied in a paper soon to be released. It was previously planned that this paper would be used as the basic document for a meeting scheduled to be held in Ottawa, Canada, in 1951, at which the information contained in this report would be discussed, and consideration given to any further steps that FAO might take in this work. It has now been proposed that such a meeting be postponed until the time of the next Session of the FAO Conference, which will take place in Rome in November 1951.

International Council for the Exploration of the Sea. The 38th meeting of the International Council for the Exploration of the Sea met in Copenhagen, Denmark, 2-10 October 1950. One hundred and twenty five delegates and experts were present, representing the following European countries: Belgium, Denmark, Finland, France, Iceland, Ireland, Netherlands, Norway, Portugal, Spain, Sweden, and the United Kingdom. Observers were present from Australia, Canada, the United States of America, and FAO.

At the opening meeting, the President, Dr. K. A. Anderson (Sweden), and the four Vice-Presidents, Mr. A. T. A. Dobson (United Kingdom), Dr. Jean Le Gall (France), Mr. G. J. Lienesch (Netherlands), and Dr. A. Ramalho (Portugal), were re-elected, and Mr. Michael Graham (United Kingdom) was elected Chairman of the Consultative Committee.

On a proposal by Mr. Graham (United Kingdom) a subcommittee was organized under the Consultative Committee to consider possible re-arrangement of the meetings of the Council. Members of this Committee were Dr. Harald Blegvad (Denmark), Dr. Le Gall (France), Mr. Graham (United Kingdom), Mr. Lienesch (Netherlands), Dr. Gunnar Rollefsen (Norway), Professor Harald Sverdrup (Norway), Dr. A. V. Tåning (Denmark), and Mr. Helge Thomsen (Denmark).

The various area committees and committees assigned to special problems such as herring, salmon and trout, whaling, shellfish, hydrography, plankton, and statistics met 3-7 October.

The final meeting of the Council was held 10 October 1950. A proposal prepared by the above-mentioned subcommittee and submitted by the Consultative Committee was considered. The Committee had considered the arrangements for the Council meetings and had found that the present organization was very effective for the co-ordination of the work, but less effective for the discussion and interchange of knowledge. The work is divided into so many committees that many experts cannot be present during all the reading of contributions and discussions, because such meetings often coincide. To improve this situation the Committee recommended

that the number of committees be reduced to seven, and suggested that many of the existing committees might be organized as subcommittees under the full committees. It also recommended that full committees should first have a general session for the discussion of all questions of general interest; administrative work, discussion of programs and plans, and meetings of subcommittees should take place thereafter.

It was also suggested that a main meeting be held, where subjects such as new gear, commercial problems, etc., in addition to scientific questions, could be discussed. It was also suggested that each year a Sunday be devoted to a meeting on a special subject. This meeting should be planned at the preceding Council meeting. The meeting calendar would thus look as follows:

	Morning	Afternoon
Monday	Council	Consultative Committee
Tuesday	General meeting	General meeting
Wednesday	Pelagic Animals	
Thursday	Northern Seas	Altantic
Friday	Littoral and Marginal Seas	Statistical
Saturday	Hydrography	Plankton
Sunday	Special meeting	
Monday	Consultative Committee	
Tuesday	Council	

This proposal was adopted at the final Council meeting and is to be sent to all members and experts for comments. It will then be discussed at the meeting of the Bureau of the Council in May 1951, in order that the scheme might come into operation at the Council meeting in Copenhagen, 1-9 October 1951. The subject of the 1951 special meeting is to be a review of the effects of hydrographical conditions on fish and fisheries. Dr. C. E. Lucas (United Kingdom) was elected convener of this special meeting and Dr. E. Poulsen (Denmark) rapporteur.

Another decision was that an over-all long-term program for the work of the Council should be compiled and made available for the use of Council members and experts. This program should cover the whole area in which the Council is active, i.e., the North Atlantic Ocean and adjacent waters including Greenlandic and Icelandic waters and waters as far south as the equator.

It was further decided that the Chairman of the Herring Committee should collect information on the requirements for echo sounders and asdic equipment. This material is to be prepared in a document which will be made available to manufacturers, who should be invited to supply further information.

Finally, a subcommittee was set up to consider whether protection of salmon in off-shore waters is required.

Permanent International Committee on Canned Foods. The second biennial meeting of the Permanent International Committee on Canned Food (Comité international permanent de la conserve) was held in Lisbon 23-28 October 1950. It was attended by some 60 delegates from 10 countries. Three plenary sessions and seven

subcommittee meetings were held; in addition, visits were paid to fish canning factories at Setubal and tomato puree and paprika manufacturing factories at Chamusca and Golega.

The subjects under discussion included: (1) analytical methods for the estimation of dry matter, chlorides, nitrogen, fats, and sugars in canned foods; (2) standardization of the sizes of round cans for fruits and vegetables and of other shaped cans for certain fish products; (3) quality standards for canned fresh peas and for tomato puree; (4) nomenclature of fishes used for the preparation of canned bonito and of those used for the preparation of anchovies.

The details of the program for the second international Congress on Canned Foods were considered and revised, and it was decided that the Congress should be held in Paris, France, October 1951.

The aim of this Congress is to appeal to a wide range of technical, scientific, and commercial interests in the canning industry. Technical papers are to be presented on developments throughout the world in the canning of meat, fish, fruits, and vegetables. Some 12 countries have already promised to contribute papers. Among the subjects will be: consideration of labeling requirements, comparison of the economics and availability of home-cooked and canned foods, analytical methods for use with canned foods, and non-enzymatic browning. A review and discussion of the past work of the C.I.P.C. will also take place.

The president of the Committee is Mr. R. V. Manaut; the Secretary-General, Mr. P. Peissi. Address of the Secretariat is 3, rue de Logelbach, Paris (17^{e}), France.

Eighteth Annual Meeting of the American Fisheries Society. The American Fisheries Society, an international association with members from the United States of America, Canada, Mexico, and other countries, covers many interests and activities related to fish and fisheries. Among its members there are fisheries administrators, fish culturists, biologists, oceanographers, technologists, limnologists, conservationists, sportsmen, commercial fishermen, fish dealers, and other groups. Anyone interested in fish, fishing, and fisheries is eligible for membership.

The Eighteth Annual Meeting of the Society took place 11-13 September 1950 in Memphis, Tennessee, U.S.A. The technical sessions concerned with "Problems of Reservoir Management and their Solution" and "Management of Farm Fish Ponds" aroused the greatest interest. About 25 technical and general papers, most of them concerning fresh-water fishery problems, were presented and discussed.

International Congress for the Study of the Role of Fish in Nutrition. The International Congress for the Study of the Role of Fish in Nutrition (Congrès international d'étude sur le rôle du poisson dans l'alimentation) was held in Paris 26-28 October 1950. (See Fisheries Bulletin, Vol. III, No. 5, p. 103.) Professor E. Terroine, Director of the National Center for the Co-ordination of Studies and Research on Food and Nutrition, Paris, was Chairman; Madame L. Randoin, Director of the Food Institute, Paris, and Mr. J. van Hal of the Association for Increasing Fish Consumption, were Vice-Chairmen.

Thirty-four papers, covering nutritive value of fish, food and industrial uses of fish, distribution of fish, and fish in the French economy, were presented at the meeting. These papers, which were mainly concerned with the nutritional and economic aspects of fish and fish consumption, were published in Congrès international d'étude sur le rôle du poisson, tenu à Paris les 26-27-28 octobre 1950 which is available from the Institut océanographique, 195 rue Saint-Jacques, Paris. The price is 1,000 francs.

FAO was represented at the meeting by the Regional Fisheries Officer for Europe, Mr. M. J. Girard.

Overseas French Union Fisheries Congress. Specialists, technologists, and industrialists with experience in fisheries activities in France and in French overseas territories took part in the Overseas French Union Fisheries Congress, held in Marseille, France, 11-14 October 1950. Research institutes and laboratories were either represented or sent communications. The Chairman of the Conference was Mr. Cordesse, Chairman of the Colonial Institute of Marseille. Mr. M. J. Girard, Regional Fisheries Officer for Europe, represented FAO at the meeting.

The work of the Congress was divided among three commissions. Commission A studied the distribution and scientific nomenclature of fish, biological environment, fisheries activities and gear in the different countries, problems related to overfishing, and miscellaneous other fisheries subjects. The main objectives were to establish uniform scientific nomenclature of aquatic resources, to centralize and unify research on tuna, to introduce modern methods and gear for detection of fish, to develop chilling and freezing methods for use in tropical countries, and to adopt rules for the conservation of aquatic resources. The Chairman was Mr. Lemasson, Director of the Fisheries Office for Indochina. The Rapporteur was Mr. Paul Rancurel who is in charge of biological oceanographic research at the Office of Overseas Scientific Research.

Commission B worked on the following subjects: vitamin A, quantitative analysis, standards, fish meal standards, quantitative analysis of oil in fish meal, study of hydrolyzates (nuoc-mam) and canning. The Chairman was Mr. M. Boury, General Inspector of Fisheries, and the Rapporteur was Mr. Bonnet, of the Colonial Institute.

The third Commission, which was devoted to economic questions, made the following proposals: to make available a systematic documentation about fish acceptable to natives of overseas regions; to study the quality problem in relation to price and the low purchasing power of the natives; to develop fisheries production in the French Union and utilization of offal and waste products; to promote fisheries development in overseas areas by reducing the cost in order to facilitate acceptance of the products on the world market, taking into account the protein needs of the local populations. The Chairman was Mr. Cojan, General Administrator of Marine Registration (Inscription maritime) and Central Committee for Sea Fisheries. The Rapporteur was Mr. M. Lengellé, Secretary of the Colonial Institute.

The papers presented at the meeting will be included in a printed report of the Congress.

FISHERIES TRAINING IN THE UNITED STATES, HAWAII, AND CANADA

Specialized training for students in fisheries research is being offered by a number of universities and colleges in the United States of America and Canada. 1/ At the present time 12 institutions are actively engaged in this field; 6 of these have extensive curricula in fisheries biology, 4 specialize in oceanographic training, and 6 offer training for fisheries technologists. One institution offers a general course for fisheries students which includes biological, technological and economic subjects, and more than 20 universities offer partial training in fisheries biology or give fisheries courses incidental to studies in general biology or wildlife management.

The best known institution giving complete training in the United States of America is the School of Fisheries at the University of Washington, Seattle, Washington. The Oceanographic Laboratories, a separate section at the University of Washington, offer instruction in the various aspects of oceanography and marine biology as well. Both departments give courses for undergraduate and graduate students.

The School of Fisheries, which was established in 1919, offers three options for degrees in fisheries at the present time: (1) commercial fisheries management, (2) fresh-water fisheries management, and (3) fisheries technology. Courses in the latter field deal principally with the processing and handling of fisheries products and include canning, curing, refrigeration, preparation of by-products, etc.

The University of Michigan, at Ann Arbor, Michigan, offers both undergraduate and graduate training in fresh-water fisheries management in its Department of Fisheries, one of three departments in the School of Natural Resources. (See also Fisheries Bulletin, Vol. III, No. 5, p. 112.)

The Department of Zoology of the University of Hawaii, Honolulu, Territory of Hawaii, offers biological training in fisheries at the undergraduate and graduate levels. Courses deal primarily with the biology and management of marine fisheries.

Instruction in fish culture as practiced in North America is given at the Alabama Polytechnic Institute, Auburn, Alabama, in the Department of Zoology and Entomology of the School of Agriculture. Facilities of the Alabama Agriculture Experiment Station, a station operated by the School of Agriculture, are available to fishery students for research projects.

The Scripps Institution of Oceanography of the University of California (Berkeley), La Jolla, California, offers courses in oceanography and marine biology. Training leads to bachelor's, master's and doctor's degrees.

The Agriculture and Mechanical College of Texas, College Station, Texas, has recently established a Department of Oceanography in its School of Arts and Science. (See also Fisheries Bulletin, Vol. III, No. 5, p. 112.) This department offers a full curriculum in oceanography for graduate students working towards master's and doctor's degrees. The major fields of instruction include biological, physical, geological, and chemical oceanography, and marine meteorology.

1/ Based on information in Fishery Research and Educational Institutions in North and South America. (See announcement p. 146).

The University of Washington is the only school in the United States offering a special full course of study in fisheries technology. Many other institutions offer courses in general food technology, and at least three -- University of Massachusetts (Department of Food Technology, School of Horticulture), Amherst, Massachusetts; Massachusetts Institute of Technology (Department of Food Technology, School of Science), Cambridge, Massachusetts; Oregon State College (Department of Food Technology, School of Agriculture), Corvallis, Oregon -- give some courses which deal specifically with fisheries products. Advanced degrees are given by these institutions.

In Canada, the University of Toronto, Toronto, Ontario, offers courses in fisheries biology in its Department of Zoology. Much of the training is given through the Ontario Fisheries Research Laboratory, an organization within the Department of Zoology.

The University of British Columbia, Vancouver, British Columbia, offers courses in fisheries biology and oceanography at both the undergraduate and graduate level in its Department of Zoology. Particular emphasis is placed on problems relating to fisheries management problems. Training in oceanography at the graduate level is offered by the Institute of Oceanography at the University. (See also Fisheries Bulletin, Vol. III, No. 4, p. 82.)

The School of Fisheries of Laval University, at Ste. Anne de la Pocatière, Quebec, offers a four-year curriculum in fisheries. Students receive undergraduate training in three fields - biology, technology, and economics - and do not specialize in any one subject.

No Canadian university has a special course of study in fisheries technology. Students entering this field may take training in bacteriology, chemistry, and related subjects at most of the universities in the country. However, some specialization is available in fisheries technology at the University of British Columbia and at Dalhousie University in Halifax, Nova Scotia. These institutions receive the co-operation of the Pacific Fisheries Experimental Station and the Atlantic Fisheries Experimental Station, respectively, of the Fisheries Research Board of Canada, in giving special courses and providing research facilities for students studying in this field.

FISHERIES PROJECT IN TROPICAL AFRICA 2/

The Uganda Fish Marketing Corporation, Limited was organized in October 1948 and registered as a public corporation for the purpose of developing the fishery resources of Uganda in East Africa. (See also Fisheries Bulletin, Vol.III, No. 2, pp. 33-34.) Fifty-one percent of the total share allocation of the Corporation is held by the Uganda Government.

The Corporation wishes to assure the continued participation of African interests in the fishing industry; and its policy is to leave the actual fishing to the

2/ Based upon information from Ian H. Dundas, "Fishing in Tropical Africa," Fish Trades Gazette (London, England) No. 3492 (13 May 1950), pp. 24-25; and Communication from the United Kingdom Colonial Office, 25 September 1950.

indigenous people. It takes over once the fish are removed from the nets, and provides general marketing and processing facilities. The Corporation also encourages the consumption of fish in order to increase the amount of protein in the diet of the Uganda Africans.

As a public corporation, special attention is paid to the welfare of all employees. Rations and fishing equipment are provided at cost for the fishermen operating for the Corporation, and consumer goods are to be made available in the areas of operation.

The general manager of the Corporation reports that the fisheries resources of Uganda are rich. Fishing in Lake Victoria, which is bordered by Kenya and Tanganyika as well as Uganda, is supervised by the Lake Victoria Fisheries Service. The Uganda Fish Marketing Corporation, however, is responsible for the development of fishing in Lake Edward, Lake Albert, and Lake George, and the rivers within the country.

Development of the Uganda fisheries was started in February 1949 at Lake George. Kasenyi was selected as the site for the corporation's fishery station and operations were under way by January 1950. The station consists of a cleaning and salting shed (150 x 36 ft.; 46 x 11 m.), salting baths, modern drying trays, two stores, and a machine shop provided with electric power, and it has three launches, a tow boat, and barges, as well as suitable docking facilities. The launches collect the fish from the native fishermen who operate from canoes. The fish are purchased by the Corporation at a fixed price throughout the year, and the Corporation supplies nets, yarn, and other supplies at cost.

Landings of fish in Lake George appear to be about 10 tons(round fresh weight basis) per working day. If daily deliveries remain at this level, a total production of some 3,000 tons of wet, salted fish, equivalent to about 1,000 tons of dried, salted fish, can be expected in 1950. This production at current prices is worth about £80,000 ex warehouse Lake George. About 94 percent of the total catch consists of the genus Tilapia; the remainder is made up of various species of catfish and lungfish.

A limited quantity of the output from Lake George is retained to provide rations for Africans on local tea estates. All production available for export from Lake George during 1950 is being sold to the Belgian Congo.

The Corporation intends to ship fresh fish to Kampala both in filleted form and in the round as soon as an ice plant can be erected, and diesel trucks mounted with tow-ton Frigmobile containers will transport the fish. It is proposed to install a quick freezing unit at Kasenyi, and a shop in the Kampala municipal market is being fitted with a cold room and a frozen fish display cabinet.

Although activities have been centered at Lake George, the Corporation is buying locally processed fish at Lake Albert for shipment to the Belgian Congo. The manufacture of fish by-products is being considered, and a fish meal plant is being erected. Work has not yet begun at Lake Edward.

MEXICAN PACIFIC SHRIMP FISHERY

A recent issue of the Pacific Fisherman features a 50-page study of the Mexican Pacific shrimp industry. 3/ The article covers many aspects of this important fishery, which extends from the northern part of the Gulf of California to the Gulf of Tehuantepec, such as the growth of the fishery, fishing methods, fishing craft, organization of the fishermen, processing and packaging, the use of freezer ships, and biological research.

It is only within the past decade that the Mexican Pacific shrimp fishery has become important. During the 1920's United States interests recognized the potentialities of this resource. At that time, as well as in the early 1930's, several attempts were made to organize an industry in the Gulf of California. It was this pioneer work which eventually led to its present successful establishment.

In the middle thirties, Japanese interests secured a four-year concession to exploit the shrimp resources. This concession was not extended, and since 1940 the fishery has been entirely in the hands of Mexican interests. In these ten years, it has extended along 2,000 miles of coastline and has become Mexico's most valuable fishery. Present estimates place its value at more than US$13 million a year.

The right to fish for shrimp along the west coast belongs to the fishermen's co-operatives, of which there are 35 to 40 groups with approximately 2,000 members. Fishermen earn up to 1,000 pesos per month. Fishing is done from dugout canoes operating cast nets and from trawlers. There are about 1,000 canoes in operation, some of which are equipped with outboard motors. The canoes are used chiefly in the bays and estuaries. The trawling fleet is made up of 450 to 500 vessels and is continually expanding. The majority of the craft are between 40 and 65 feet in length, the newer vessels having steel hulls.

The bulk of the catch is exported to the United States of America. It is usually packed for export in 5-pound ice-glazed blocks and packaged in heavy waxed cartons, but a 12-ounce consumer package is rapidly increasing in popularity. Packaging is done at 20 shrimp freezing plants along the coast. The largest number is at Guaymas, Sonora, where there are eight. The daily freezing capacity of the plants varies from 2-1/2 to 20 tons, the average being about 10 tons.

For the 1950-51 season the first major freezer ship is participating in the fishery. This is the 160-foot steel vessel "El Guaymense." It will operate along the entire 2,000 mile coastline from Punta Peñasco to Salina Cruz. There are also a number of other larger freezer ships being put into service.

To obtain the scientific information necessary for the rational exploitation of the shrimp, the industry established, with governmental support, the Pacific Institute of Fisheries (Instituto de Pesca del Pacífico). This Organization carries on biological investigations with a view to formulating sound conservation regulations.

Some idea of the importance and growth of the shrimp fishery since the early thirties is given by examining the export statistics. In 1934, approximately 300 metric

3/ "A 50-page Study of the Shrimp Industry of Pacific Mexico," Pacific Fisherman (Seattle: Miller Freeman Publications, Inc.), Vol. 48, No. 10 (September 1950), pp. 29-78.

tons were exported to the United States. By 1939, exports amounted to 1,720 metric tons; in 1944, 2,760 metric tons were exported and in 1949 exports amounted to 8,030 metric tons. The 1950 exports surpass the 1949 exports with fishing still in progress.

SOME FISHERIES PROBLEMS OF VENEZUELA AND ECUADOR

Venezuela and Ecuador, in common with other Latin-American countries, are anxious to improve their utilization of fisheries resources. In this connection the Fisheries Regional Officer for Latin America, Dr. B. F. Osorio Tafall, visited these countries at their request to assist in delineating fisheries problems and to advise on the application of the Expanded Technical Assistance Program of the Food and Agriculture Organization. (See Fisheries Bulletin, Vol. III, No. 5, p. 114.)

During his stay in Venezuela, Dr. Osorio worked in close co-operation with the officials of the Fisheries Section (Ministry of Agriculture and Animal Husbandry) and with the Fisheries Department of the Venezuelan Development Corporation. The Venezuelan problem falls principally into two categories, the biological and the economic. The former includes the necessity of intensifying oceanographic and marine biological studies so that intelligent utilization and management can be applied to the fisheries resources. Such studies should form the basis for a Venezuelan fisheries chart and should also provide some of the information required for framing adequate regulations for conservation of the fisheries resources.

Steps in this direction are being taken. The Venezuelan Government plans to establish a marine biological station in Cumana, for which the budget has already been approved. Cumana will make a suitable site for such a station, since it is the most important fishing harbor in the country and the center of the canning industry. The Venezuelan Fisheries Section possesses a modern research boat with oceanographic and fishing equipment suitable for investigating the hydrographic conditions and fisheries resources of both the eastern and western zones of Venezuela. With the proper application of these facilities and the new station, it should be possible to make good progress in biological research. For this work the government will probably request an expert through FAO's Technical Assistance Program.

The economic program should encourage the gradual introduction of changes in the present fishing methods, and possibly the establishment in some cases of a proper regulation of the fishing effort. With regard to fish handling and the secondary phases of the industry, a thorough study should be made of the distribution and marketing systems. This applies to fish canning especially, as no recommendations can be formulated for the establishment of the canning industry on a sound commercial basis without such studies.

Fresh-water fisheries were also visited by Dr. Osorio. His first trip was to Maracay and Lake Valencia, a large body of water about 110 miles from Caracas. The volume of water in this lake which covers about 378 square kilometers, is diminishing due to intense evaporation and silting of the lacustrian bed with material carried down from the surrounding eroded hills. The fish productivity in Lake Valencia is low, and the government is interested in making hydrographic studies to determine whether the lake can be restocked with commercially valuable indigenous species.

Another trip was made to the eastern section of the country -- to Barcelona (capital of the state of Anzoátegui) and the nearby city of Puerto La Cruz, the site of the Pesquerías Caribe freezing plant. The projects of Pesquerías Caribe, a fisheries development company, were outlined in Vol. III, No. 4 of this Bulletin. These projects have been very much curtailed during the past months by high operating costs and insufficient demand for freezing fish.

The next locality visited was Cumana (the capital of the state of Sucre) on the shores of the rich Gulf of Cariaco. In this area there are six modern canneries, mostly engaged in the production of sardines in oil. Dr. Osorio learned from discussion with the managers that the former very remunerative exports to foreign countries have fallen to practically nil because of competition from similar foreign products. There is a large accumulation of stocks, several plants have discontinued production, and others have reduced their output.

The fishing grounds in the Gulf of Cariaco are amongst the most productive in Venezuela. The annual catch of what is locally called sardine (Clupanodon pseudohispanicus) is about 15,000 metric tons. The bulk of the catch is processed in local canneries and the remainder treated in a reduction plant which produces 500 tons of fish meal, of which the protein content is stated to be 55 percent.

In this area also is Margarita Island in the Caribbean Sea, a typical fishing center, which was formerly famous for pearl production. Here the annual production amounts to about 4,000 metric tons, consisting principally of Spanish mackerel, snappers, grunters, snook, jacks, and cutlass fish, with a value of about US$1,500,000. There are 26 fishing localities around the island, the most important being Porlamar and Juan Griego. The economy of the whole island, containing about 50,000 people, depends upon the fishing industry.

A further trip was made to Ciudad Bolivar, an important harbor on the lower reaches of the Orinoco River. In this area the fishing of zapoara is an important commercial fishery. This fish weighs about six pounds and migrates upstream every year during August; it follows a course where the flow is more intense and is caught with jigs and cast nets. This fishery is an important supply of food for the area and is capable of some expansion and better utilization.

Dr. Osorio spent two weeks in Ecuador. In Quito, assistance was rendered to the Congressional Commission in the drafting of a new fishing law. Assistance was also given to the Ecuadorian Fisheries Department in drawing up plans for future work and in formulating a request for technical assistance in order to implement it. In the past years many attempts have been made by the Ecuadorian Government to encourage the development of fish canneries. Several contracts have been signed with foreign enterprises, but up to the present none of the projects have materialized. The marine fisheries resources appear to be plentiful, particularly around the Galapagos Archipelago, but very little of the catch is secured by Ecuadorian fishermen.

Valuable information on the fisheries resources of the region which is necessary to round out the Latin-American picture was gathered in Esmeraldas, Bahía de Caracas, and Manta (the latter being the most important fishing locality in the country). The local fishing fleet consists of several hundred wood-carved canoes. Each canoe carries two or three fishermen who use only hook and line, or occasionally trawl lines, in fishing for bonito, yellowfin tuna, red snapper, marling, grouper,

grunt, and other species. It is likely that these rather primitive methods can be improved by the gradual application of more modern techniques. This would be in line with the wishes of the Ecuadorean government, which desires to develop its fisheries and their utilization to improve the standard of living of the country. In addition to more modern methods of catching, attention will have to be paid to better preservation and transportation of fish products, so that this food may be sent to the inland communities at a price which is within reach of the inhabitants.

On the way back to Washington brief stops were made in other countries of the region. In Bogotá (Colombia) recent information was gathered from the Fisheries Bureau, as well as from ICOPESCA, the government sponsored organization for fisheries development which has just begun a new program to develop fisheries on both Colombian coasts. Several days were spent in Costa Rica in consultation with fisheries officers and observation of that country's principal fishing port, Puntarenas, which possesses both a tuna cannery and a tuna freezing plant.

THE DARCY VARGAS FISHERIES SCHOOL, BRAZIL 4/

The Darcy Vargas Fisheries School (Escola Técnica Darcy Vargas), located on Marambaia Island, state of Rio de Janeiro, in Brazil, was founded by a private charity foundation and the Brazilian Federal Government to provide the sons of Brazilian fishermen with elementary general education and with practical knowledge on commercial fishing.

The practical fishing course teaches the different fishing methods, including rudiments of navigation and boat handling, the manufacture of nets, construction and repair of fishing boats, and elements of processing, canning, and packing fish and its by-products.

The school is equipped with a fleet of boats of several sizes, a net factory, a boatyard, and an industrial fish plan. Some of the fish caught by the students are sold in public markets and some are used in the school fish plant, where salted, pressed, and canned sardines, dried shark filets, and shark-liver oil are produced. These products are also sold in public markets, giving the students the opportunity of becoming acquainted with the marketing of fish and fisheries products.

The school, which has a capacity for 1,200 students, had an enrollment of 300 students in 1948. It had then graduated three classes of fishermen.

4/ Information obtained from: Treze anos de trabalho cristão, 1935-1948 (Thirteen Years of Charitable Work), Fundação Abrigo do Cristo Redentor, Rio de Janeiro, D.F., Brazil, 1949; and from a report by an FAO staff member.

Fisheries Division Activities

FAO MEETING ON HERRING TECHNOLOGY

The FAO meeting on herring technology held in Bergen, Norway, 24-29 September 1950, brought together 106 fisheries experts from Belgium, Canada, Denmark, Finland, France, Iceland, the Netherlands, Norway, Sweden, United Kingdom, United States of America, and Western Germany. A representative of the International Council for the Exploration of the Sea was also in attendance. Papers were presented on the various aspects of herring processing for food and other products including meal and oil. In discussing the prospects of further technological development, the delegates felt that there were definite possibilities of finding new herring products which might appeal to the consumer more than such products as ordinary salted herring and which might therefore compensate for the decreasing consumption of the usual herring products. Other more inexpensive preparations which might fit the food habits of protein needy populations in such areas as Africa and Asia might also be devised.

The meeting concluded that an active study of the technological aspects of these problems should be undertaken and recommended that co-operation in this field between the countries concerned should be encouraged.

A summary report of the meeting is available in English and French from FAO. A complete report containing papers and summaries of discussions will be published later.

FAO MEETING OF GOVERNMENT FISHERIES TECHNOLOGISTS

In this meeting, held in Bergen, Norway, 29-30 September 1950 immediately following the Herring Technology Meeting, participants were official government representatives from Belgium, Canada, Denmark, Finland, France, Iceland, the Netherlands, Norway, Sweden, United Kingdom, United States of America, and Western Germany.

The possibilities of establishing closer co-operation between research workers dealing with problems related to the handling and processing of fishery products were discussed. Although some such co-operation already exists, there is a definite need for an organization to co-ordinate and stimulate research and exchange of information and experiences in the application of research results.

It was unanimously agreed to recommend that such an organization should be set up. As it would presumably be particularly needed in northwestern Europe, where there is no other body for co-operation in this field, it was suggested that all meetings of the proposed organization should be held in this area. All countries should be invited to participate, however, by appointing one member of a main committee. This committee should consider the fields in which research and co-ordination are most needed, and should elect an executive committee of not more than five members. This

executive committee should be responsible for the appointment of working groups in the various fields of research, and should be composed of technologists actively engaged in research or development work. The researchers themselves would determine whether, and to what extent, such work was compatible with the research work of their respective research institutions.

As the establishing of such an organization requires some time, an ad hoc committee was elected to endeavor to set up such working groups in fields where early action is needed. This committee would also assist in setting up the proposed organization, for which FAO was asked to provide secretarial assistance.

In the field of fish handling and processing, this organization will closely correspond to the International Council for the Exploration of the Sea, which is responsible for the co-ordination of research in fisheries biology, oceanography etc., in the same geographical area. It will be smaller, however, and somewhat different in formal arrangement.

CO-OPERATION WITH OEEC

The Chief of the Economics and Statistics Branch, Mr. G.M. Gerhardsen, reported to the Organization for European Economic Co-operation (OEEC) on 20 August 1950 to start his work as Co-ordinating Secretary for a group of experts who are to examine the factors hampering the marketing of fish in Europe. 1/ Mr. Gerhardsen met with the Steering Group of the OEEC Sub-Committee on Fisheries for three days to review and revise the program for the study. It was decided to deal with all stages of fish supply, from primary production to marketing and consumption, with emphasis on the factors now hampering trade.

The following experts were nominated by their governments and subsequently appointed by the Steering Group as members of the team: Mr. J. le Garrec, France; Mr. F. Hoffmann, Germany; Mr. H. Thorarinsson, Iceland; Mr. E. Heen, Norway; and Mr. R.J. Sheppard, United Kingdom. These experts are of varied backgrounds and experience. The French expert is a trained engineer working in the trawler industry. The German expert is engaged in the wholesale fish trade, as well as in imports and fish processing; he is President of the Economic Union of Fisheries and of the Union of Wholesalers of all sea fish markets. The Icelandic expert is Managing Director of the Union of Icelandic Fish Producers and has long experience in the trade in salted fish. He has travelled extensively on behalf of the Union. The Norwegian expert is Director of the Chemical and Technological Research Institute attached to the fisheries administration in Norway and has special experience with transportation and marketing of frozen fish. The United Kingdom expert has just completed his work as Deputy Controller of the German Fisheries Control Board, Hamburg. Prior to the war he was in the fish trade in Newfoundland.

The month of September was used by the team to bring together available material on the Western European countries and to prepare preliminary surveys. After meeting in Paris for one week at the beginning of October with the Co-ordinating

1/ See also Fisheries Bulletin, Vol. III, No. 4, p. 89.

Secretary and Mr. M. J. Girard, FAO's Regional Fisheries Officer for Europe, the experts departed on a series of visits to interview governmental officials and representatives of the trade. The visits were expected to be completed about 10 December. The experts will then meet in Paris for discussions with the Steering Group and to work on the final report which is expected to be ready by the beginning of February. Some background statistics are being assembled with the assistance of the FAO Fisheries Division.

OTHER ACTIVITIES

S. Y. Lin, FAO Fisheries Biologist, was in Haiti from 19 June to 15 August and drew up a program for the construction and stocking of fish ponds. (See Fisheries Bulletin, Vol. III, No. 3, p. 62.) His recommendations have been accepted by the Haitian Government, and the necessary appropriations have been made to enable the work to proceed. He returned to Haiti on 6 November and will remain there for about two months to initiate and supervise the construction and stocking of the ponds.

The Regional Fisheries Officer for Latin America, Dr. B. F. Osorio-Tafall, will be in Montevideo 9-15 December attending the Second FAO Latin-American Regional Meeting on Food and Agricultural Programs and Outlook. A paper has been prepared by the Fisheries Division for the session dealing with Latin-American fisheries. The 4th Latin-American Conference on Agriculture, convened by the Organization of American States, is being held simultaneously with the FAO meeting, and several joint sessions have been planned. Following the Montevideo meeting, Dr. Osorio will visit Santiago for discussions with fisheries officials on the extension of technical aid for the development of fisheries through the Expanded Technical Assistance Program.

For a report on Dr. Osorio's trip to Venezuela and Ecuador, see p. 141.

FISHERIES RESEARCH AND EDUCATIONAL INSTITUTIONS IN THE AMERICAS

The FAO Fisheries Division is collecting information on world fisheries research and educational institutions. A directory or catalogue of such institutions in North and South America has been prepared by the Division and is now in press. It lists government agencies and other institutions engaged in biological and technological fisheries research and education, briefly outlines their activities, lists publications issued, and gives the title and name of the senior fisheries officer of each organization.

The catalogue is designed to encourage the exchange of information about comparable research problems and to acquaint workers in one area with the number, types, and programs of institutions in other regions. It should be particularly useful to the workers, institutions, and governments of nations with less developed fisheries that may wish to contact organizations in the more developed countries. It may be of assistance to nations that are planning to organize research programs.

The universities and colleges offering specialized training in fisheries are noted, with an outline of the type of training given. With such information, prospective students will receive some guidance in selecting institutions offering the specialized training they desire.

Notes on Publications and Films

FILMS

New England Fishermen. Producer and distributor: Encyclopaedia Britannica Films Inc., Wilmette, Illinois, U.S.A. Technical data: 16 mm., black and white, sound, 10 minutes running time, commentary and titles in English. Price: 16 mm. print $50.00; rental $2.50 for 1, 2, or 3 days.

This film, produced in co-operation with Dr. Wallace W. Atwood of Clark University, Worcester, Massachusetts, U.S.A., has several sequences of a general nature on the fishing industries of the New England states. It shows the old-type fishing schooners still in use in the Bank fisheries in the northwest Atlantic, long-line fishing from dories, modern trawlers, and, in some detail, the hauling of the trawl and the cleaning and storing of fish aboard.

Grand Manan. Producer and distributor: Canadian National Film Board, Ottawa, Ontario, Canada. Film may also be obtained through Canadian embassies, delegations, and consular representatives and through the Board's offices in New York and Chicago. Technical data: 16 mm., color, sound, 10 minutes running time, commentary and titles in English. Price: 16 mm. print $25.00; rental $1.50.

Conditions on Grand Manan Island in the Bay of Fundy (Canadian Atlantic coast) are shown. The fishing industries here are particularly connected with herring fisheries. The large weirs and other fish traps are shown in some detail with sequences showing the tending of the weirs and use of carriers by the fish canneries. Salting, cleaning, and smoking of herring are shown briefly.

Trappers of the Sea. Producer and distributor: Canadian National Film Board, Ottawa, Ontario, Canada. Film may also be obtained through Canadian embassies, delegations, and consular representatives and through the Board's offices in New York and Chicago. Technical data: 16 mm., color or black and white, sound, 12 minutes running time, commentary and titles in English. Price: 16 mm. print $75.00 in color, $25.00 in black and white; rental $2.50 for color, $1.50 for black and white.

The film describes the lobster fisheries on the Canadian Atlantic coast. It first shows the baiting and setting of single traps and trap lines, i.e., traps set together on long lines connecting 10 to 15 traps, and later how the female lobsters and undersized lobsters are returned to the sea in compliance with conservation regulation. The film also covers the live storage of lobsters, the canning of the smaller lobsters, and live shipments of the larger ones to the markets.

Science Goes Fishing. Producer and distributor: Canadian National Film Board, Ottawa, Ontario, Canada. Film may also be obtained through Canadian embassies, legations, and consular representatives and the Board's offices in New York and Chicago. Technical data: 16 mm. and 35 mm., black and white, sound, 10 minutes running time, commentary and titles in either English or French. Price: 16 mm. print $25.00; rental, $1.50.

The film pictures practical fisheries research problems. It shows how a fishing population may be sceptical, almost hostile, towards the research worker. Only slowly, through personal contacts, does the scientist succeed in gaining the confidence of the fishermen; when he is finally accepted as a collaborator, his advice is sought and followed.

Home Cookery of Fish. Producer and distributor: Encyclopaedia Britannica Films Inc., Wilmette, Illinois, U.S.A. Technical data: 16 mm., black and white, sound, 400 feet, 10 minutes running time, commentary and titles in English. Price: 16 mm. print $50.00; rental $2.50 for 1, 2, or 3 days.

This film was produced in co-operation with Mrs. Rose Kerr of the Fish and Wildlife Service, Department of the Interior, U.S.A. The film briefly shows exhibits of both fresh and frozen fish in modern stores. It then shows in detail the cooking of cod fillets, broiling of halibut steaks, and the preparation of stuffed whitefish.

PUBLICATIONS

España Pesquera (Spanish Fisheries), Vol. 1, No. 1 (January 1950). Sindicato Nacional de la Pesca, Alcalá, 31, 4° piso, Madrid, Spain. 64 pp., illus. In Spanish.

This first number of a monthly publication issued by the National Fisheries Syndicate contains information on fishing methods and gear, boats, use of fisheries resources, processing methods, Spanish trade relations, legal aspects of the fisheries industry, and activities of the fishermen's syndicates.

Marine 50, Nos. 1, 2 (June, August 1950). Secretariat Social Maritime, 12, rue Duguay-Trouin, Paris (6e), France. In French.

This new publication is in loose-leaf form, with each note or article on a separate sheet. The first two issues contain notes on the 1950 French sardine fishing season, on echo-sounders, on the precooking of sardines, and on the 1950 mackerel fishing season.

Testalin zur Netzkonservierung (Testalin for Net Preservation). A. v. Brandt. Protokolle zur Fischereitechnik, Nr. 1, Institut für Netz - und Materialforschung der Bundesanstalt für Fischerei, Hamburg-Altona, Germany, 1950. 21 pp., mimeo. In German.

The first report of a new series issued by the Nets and Materials Research Institute of the German State Organization for Fisheries contains the results of experiments using testalin, a patented preservative consisting mostly of cuprous oxide, to preserve nets of cotton, manila, and hemp. The effects of the treatment on the tensile strength, weight, and abrasion resistance of the twines are also reported.

Conservation of Natural Resources. Edited by Guy-Harold Smith. John Wiley and Sons, Inc., New York, New York, U.S.A., and Chapman and Hall, Limited, London, England, 1950. x + 552 pp., illus. In English.

Each of the eight parts of this book contains several contributions by authors with a special knowledge of particular natural resources of the United States of America. Part Six includes a chapter entitled "Fisheries for the Future" by Howard H. Martin in which he reviews the great fisheries of the United States and gives information on distribution, production, exploitation, depletion, and rehabilitation. Reference is made to international conservation agreements in which the United States participates, including those concerning Pacific halibut, sockeye salmon of the Fraser River, seal herds of the Pribilof Islands, and world whale resources.

Bibliography of Canadian Biological Publications for 1947. J. Murray Speirs and J.M. Johnston. University of Toronto, Department of Zoology, Ontario Fisheries Research Laboratory, Toronto, Ontario, Canada, February 1950. 102 pp. In English.

More than 300 papers on fisheries topics are listed in this bibliography, which covers the biological literature written by Canadians or dealing with Canadian wildlife published in 1947. Publications dealing with medical and commercial aspects are omitted unless the biological content predominates. The works are listed alphabetically by author under general subject headings. A similar bibliography for 1946 was prepared by J. Murray Speirs and published by the Ontario Department of Lands and Forests (Biological Bulletin No. 3, 1949).

Publications of the Institute of Fisheries Research 1930-1949. Michigan Department of Conservation, Institute of Fisheries Research, University Museums Annex, Ann Arbor, Michigan, U.S.A., 1950. 20 pp. In English.

This pamphlet lists and gives directions for obtaining the publications issued by the Institute in the following series: (1) Bulletins which receive general distribution and cover some phase of research or management work; (2) Miscellaneous Publications which include compilations of data or the results of technical investigations; and (3) Reprints of articles of a technical or popular nature prepared by the Institute staff which appear in outside journals.

Norway, Fisheries and Fish Processing. Edited by Conrad Hofgaard. Norges Eksportrad, Solplassen 1, Oslo, Norway, 1949. 128 pp., illus. In English.

Among the topics covered in this discussion of the various branches of Norwegian fishing, processing industries, and trade in fisheries products are: Norwegian coastal fisheries; deep-sea fisheries; sealing; refrigerating; processing and canning industries; export trade of iced, frozen, cured, and canned products; herring oil, meal, and fish meal industries; sales organization; government administration; and oceanographic research.

Norsk Fiskeri og Fangst Handbok (Norwegian Fishing, Whaling, and Sealing Handbook). Edited by Jan Strøm. Alb. Cammermeyers Forlag, Oslo, Norway, 1949. Volume I, 970 pp., illus.; Volume II, 236 pp., illus. In Norwegian.

Volume I gives a general description of the Norwegian fisheries industries, including whaling and sealing. It describes economic conditions among fishermen, fisheries education, and various methods of processing fishery products. It also gives some information on the organization of trade, the fisheries administration, and laws and regulations pertaining to fishing and fishery products. Volume II is a directory of institutions, organizations, and enterprises in the Norwegian fisheries industries.

Svenska västkustfiskarna (The Swedish West Coat Fishermen). Olof Hasslöf. Svenska Västkustfiskarnas Centralförbund, Fiskhamnen, Göteborg, Sweden, 1949. 570 pp., illus., bibliog., and appendices. In Swedish.

This book is the result of an extensive study of the history of the Swedish west coast fishermen written by the author as a doctor's thesis and published by the Swedish West Coast Fishermen's Association to commemorate its twentieth anniversary. The study deals with the development of fishing methods and gear, boats, trade, fish processing, shipping, farming, and the settlement of the fishermen. It is a basic description of Sweden's most important fishery.

Annual Report for the Year 1949. Fisheries Research Board of Canada, Ottawa, Ontario, Canada, 1950. 102 pp., illus., 13 appendices. Report in English and French, 12 appendices in English and one in French.

This is a general survey of the activities of the Fisheries Research Board. The appendices cover reports of the directors of the seven biological and technological stations; summaries of the special work done on the Atlantic salmon, the Atlantic herring, and the Eastern Arctic investigations. There is also a report on the work of the Canadian Joint Committee on Oceanography; a list of publications issued by the Board in 1949; and the names of members of the Board and of the scientific personnel.

Annual Report of the Director of Fisheries for the Period 1st April 1948 to 31st March 1949. Hong Kong Fisheries Department, Hong Kong, 1949. 10 pp., 5 figs. In English.

The activities of the Fisheries Department and the duties of the staff are covered in this publication. It also reports on the condition of the fishing industry and on the biological research program and gives graphs on landings, exports, and imports.

Third Biennial Report 1948-49. State of Louisiana Department of Wild Life and Fisheries, New Orleans, Louisiana, U.S.A., 1950. 372 pp., illus. In English.

This includes the report of the Commissioner which summarizes the work of the Department; reports of the directors of each division--Education and Publicity, Fur and Refuge, Law Enforcement, Fish and Game, Oyster and Water Bottoms, and Research and Statistics; a report by the Chief Biologist on the biological research undertaken and a paper on oyster mortalities.

Annual Report for 1949. State of Washington Department of Fisheries, Seattle, Washington, U.S.A., 1950. 184 pp., illus., appendix. In English.

This report presents a summary of the activities of the Fisheries Department during the year, research programs, detailed landing and production statistics, and an appendix on miscellaneous subjects, such as smoke curing of salmon, life history of the Pacific razor clam (Siliqua patula), biology of the oyster, life history of the oommercial crab, Washington fishery resources, and hatchery procedures.

Nova Scotia Fisheries Yearbook 1949-1950 and Directory of Fish Packers and Processors. Province of Nova Scotia, Department of Trade and Industry, Halifax, Nova Scotia, Canada, 1950. 64 + 35 pp., illus. In English.

This second Yearbook contains trade reviews of the fresh, frozen, and smoked fish industry and Nova Scotia's salt fish industry. A technological article describes

the development of the drying of salt fish, from primitive methods to the most modern dryers. Statistical reviews of landings of the main commercial fishes, primary and secondary production, and distribution and consumption are followed by a classified directory of fish packers and processors.

Laws and Regulations Concerning the Administration of Commercial Fisheries of the Province of Quebec, Canada. Contribution No. 28. Province of Quebec, Department of Fisheries, Quebec, Canada, 1950. 59 + 59 pp. In French and English.

This booklet contains the laws and regulations passed by the Province of Quebec for the development of its fisheries. Together with the federal legislation, they constitute the basis of the administration of the fisheries. Included are laws and regulations on the preparation and inspection of sea food, hunting of seals, establishment and operation of departmental cold storage warehouses, establishment of credit unions and co-operative syndicates, fish co-operative federations, establishment of fisheries schools and settlement plans for young fishermen. Administrative forms such as cannery permits, fish plant permits, fishing licenses, and application forms are reproduced as appendices.

Commercial Fishing Companies and Fish Exporters - Morocco. United States Department of Commerce, Office of International Trade, Washington, D.C., May 1950. Mimeo. 8 pp. In English.

A short review of commercial fishing in relation to the fresh fish markets and canning industries in French Morocco is followed by a list of the fishing companies. The fishing industries in the Spanish Zone and the Tangier International Zone of Morocco are also briefly reviewed, and there is a list of the commercial fishing companies in each of these Zones.

A Guide to Marketable Fish. R. J. Daniel. Proceedings and Transactions of the Liverpool Biological Society, Vol. 57, Sessions 1948-1950, Appendix I. University Press, Liverpool, England, 1950. 68 pp., illus. In English.

The main methods of fishing and the main Atlantic and European fishing grounds are described in this book. It contains outline drawings of 36 types of commercial fish and tables showing their characteristics (color, length, appearance of lower jaw, lateral line, spawning season, and distribution). It gives an account of various fish diseases and parasites, and describes the methods of commercial fish preservation. An appendix includes the Ministry of Agriculture and Fisheries' retail trade names for fish (Fisheries Notice No. 23), a list of the suggested trade names, the scientific names, and the general English equivalents for some 50 fishes.

Comptes rendus de la Conférence piscicole anglo-belge, Elisabethville (Congo belge), 13-18 juin 1949 (Report of the Anglo-Belgian Fisheries Conference, Elizabethville, (Belgian Congo), 13-18 June, 1949). Publication des Directions de l'Agriculture du Ministère des Colonies et du Gouvernement général du Congo belge. Ministère des Colonies, Brussels, Belgium, 1950. 355 pp., illus., tables, diagrams. In French and English.

The report of the conference at Elizabethville on inland fisheries and fish farming gives the proceedings, the organization of the conference, names of participants, conclusions and recommendations, and inaugural and closing speeches. It also includes the 26 technical papers presented during the conference.

Transactions of the American Fisheries Society, 1949. Seventy-ninth Annual Meeting, Winnipeg, Manitoba, Canada, September 1949. American Fisheries Society, St. Paul, Minnesota, U.S.A., 1950. 344 pp., figs., tables, appendices. In English.

This includes 22 technical papers presented at the Seventy-ninth Annual Meeting of the American Fisheries Society, reports of the Society's committees on different aspects of fisheries activities in North America in particular and the world in general, and also reports on the business matters of the Society.

A Comparison of the Bluefin Tunas, Genus Thunnus, from New England, Australia and California. H. C. Godsil and Edwin K. Holmberg. Fish Bulletin No. 77, California Division of Fish and Game, Bureau of Marine Fisheries, Sacramento, Ca ifornia, U.S.A., 1950. 55 pp., 15 figs., appendix. In English.

This is a comparative study of the anatomy and morphology of some bluefin tunas from the Atlantic and Pacific coasts of the United States and Australia, with accounts of the systematic relationship of these tunas.

Contribución al Estudio de los Escómbridos de la Costa Vasca (Atún, Bonitos y Melva) (Contribution to the Study of the Scombroid Fishes of the Basque Coast - Bluefin Tuna, Albacore, Skipjack, and Frigate Mackerel). José María Navaz. Sociedad de Oceanografía de Guipúzcoa, Publicaciones No. 8, San Sebastian, Spain, 1950. 21 pp., 4 figs., tables, appendix. In Spanish.

This paper contains data on the landings of bluefin tuna (Thunnus thynnus), core (Germo alalunga), skipjack (Katsuwonus pelamis), and frigate mackerel (Auxis thazard) during the period 1942-49 at the port of San Sebastian in Spain, and compares these landings with those at other Spanish ports during these years. Also included are descriptions of the fishing methods, biometric studies on the four species, a list of common names for each species, and a bibliography.

Observations on the Spawning of Philippine Tuna. Charles B. Wade. Fishery Bulletin 55. United States Department of the Interior, Fish and Wildlife Service, Washington, D.C., U.S.A. 15 pp., 9 tables, 3 figs. In English.

Preliminary observations on the spawning of tuna in Philippine waters were collected by the Philippine Fishery Program's research vessel "Spencer F. Baird" from October 1947 through November 1948. Three species of tuna, Neothunnus macropterus, Katsuwonus pelamis and Ethynnus yaito, were selected for preliminary observations relative to spawning. The author suggests that the field methods used in this preliminary work for determining the degree of sexual maturity needs refinement before it can be used in a comprehensive study of the life histories of the several species.

Estudios sobre el Espadín (Clupea sprattus L.) de la Costa Noroeste de España (Studies on Spratt (Clupea sprattus L.) from the Northwest Coast of Spain). M. Oliver. Boletín del Instituto Español de Oceanografía, No. 26, Madrid, Spain, 1950. 15 pp., 7 tables. In Spanish.

The studies describe the size, life history, and growth of 666 specimens of spratt entering the commercial fishery in the waters off northwestern Spain.

Pesca y Utilización del Boquerón y la Sardina en las Costas de Málaga (Fishing and Utilization of Anchovy and Sardine on the Coast of Malaga). Luis Bellon. Boletín del

Instituto Español de Oceanografía, No. 30, Madrid, Spain, 1950. 115 pp., 56 figs., 13 plates, 13 tables. In Spanish.

A general account is given of the sardine and anchovy fisheries of the South Mediterranean region of Spain and their relative importance. There are descriptions of fishing grounds and fishing seasons; gear, boats, and fishing methods; utilization of catch including by-products, mainly fish scrap and oil; and the Malaga canneries. The book also includes production statistics. It is illustrated with line drawings of boats and nets and with photographs.

Sardine Fishing in Israel. H. Lissner. Scientific and Technical Informations (formerly Reports) No. 2. Ministry of Agriculture, Department of Fisheries, Sea Fisheries Research Station, Haifa, Israel, 1949. 42 pp., 6 figs. In English and Hebrew.

A historical account of the sardine fishery off the coast of Israel is given as a basis for discussing the possibilities of expansion. Israel's sardine fishery is not extensive, and the author pieces together available information to indicate that larger catches are possible. Information on the neighboring Egyptian sardine fishery is also presented to support his contentions.

Average Lunar Month Catch by California Sardine Fishermen, 1932-33 through 1948-49. Frances N. Clark and Anita E. Daugherty. Fish Bulletin No. 76. California Division of Fish and Game, Bureau of Marine Fisheries, Sacramento, California, U.S.A., 1950. 28 pp., 6 figs., 12 tables. In English.

An analysis of the average lunar month catch of California sardines (Sardinops caerulea) is presented, based on a summation of the daily catches by individual fishing boats delivered each lunar month or between two full moons. The changes in fishing methods and boats over the 17-year interval are taken into consideration.

Oysters in Texas. J. L. Baughman and Byron B. Baker, Jr., Bulletin No. 29 (Marine Laboratory Series No. 1). Texas Game, Fish and Oyster Commission, Austin, Texas, U.S.A. 37 pp., figs., tables. In English.

This bulletin contains information on the life history, reproduction, enemies, habitat, and harvesting of oysters, with particular reference to those of the State of Texas. It also discusses the value of the oyster industry to Texas, recommendations for changes in legislation, and biological research.

Oyster Culture in Japan. A. R. Cahn. Report Number 134. General Headquarters, Supreme Commander for the Allied Powers, Natural Resources Section, Tokyo, Japan, September 1950. 80 pp., 40 figs., 30 tables. In English.

Preparation of this report on the history of oyster culture in Japan from its beginning to the present time necessitated translation and study of hundreds of publications in the Japanese language. The report contains material dealing with: (1) species and distribution; (2) biology - spawning, reproduction, development, food, sex reversal, growth and chemistry of oysters; (3) culture of Ostrea gigas - spat collection, growing methods, and seed oyster culture; (4) culture of other species - O. denselamellosa and O. rivularis; (5) utilization of by-products - harvesting and utilization of meat and shell; (6) production and export - edible oyster production, seed oyster production, and export and history of seed oyster export; (7) enemies and damage - elemental and biological; (8) regulations - a selected bibliography and a glossary of technical terms, conversion factors, and Japanese terms.

The Pearl-Oyster Resources of Panama. Paul S. Galtsoff. Special Scientific Report: Fisheries, No. 28. United States Department of the Interior, Fish and Wildlife Service, Washington, D.C., U.S.A., May 1950. 53 pp., 28 illus. In English.

The pearl-oyster grounds along the Pacific coast of Panama were surveyed to determine the cause or causes of a rapid decline in the fishery. This report on the survey includes the history of the fishery and its economic importance, ecological conditions, topography of the Gulf of Panama, water movements, physical and chemical characteristics of the water, and general observations on pearl and edible oysters. The author concludes that overfishing was the most probable cause of the depletion.

Studies on Penaeids of Japanese and Its Adjacent Waters. Itsuo Kubo. Journal of the Tokyo College of Fisheries (formerly Journal of the Imperial Fisheries Institute), Vol. 36, No. 1. The Tokyo College of Fisheries (formerly Imperial Fisheries Institute), Kurihama, Yokosuka City, Kanagawa Pref., Japan, March 1949. 467 pp., 160 figs. In English.

This is a systematic study of the species of the Family Penaeidae in Japanese and adjacent waters. The author describes 2 new genera and 21 new species and gives a table of the geographic distribution of the 67 species studied, an extensive systematic section, keys for subfamilies, genera, and species, and an extensive bibliography.

The Distribution of Thaliacea (Salps and Doliolids) in Scottish Waters 1920 to 1939. James H. Fraser. Scientific Investigations 1949, No. 1. Scottish Home Department, Fisheries Division, Edinburgh, Scotland, 1949. 44 pp., 16 figs., 4 tables, appendix. In English.

The results of investigations on distribution of Thaliacea in Scottish waters are reported here. The investigations were conducted as a means of assisting in a study of the general hydrography and fisheries problems.

An Analysis of the Bottom Fauna Production in Fertilized and Unfertilized Ponds and its Utilization by Young-of-the-Year Fish. Mercer H. Patriarche and Robert C. Ball. Technical Bulletin 207. Michigan State College, Agricultural Experiment Station, Section of Zoology, East Lansing, Michigan, U.S.A., May 1949. 35 pp., illus. In English.

An experiment was carried out to measure the effect of fertilization on the fish-food organisms in pond waters and the utilization of these organisms by the young-of-the-year fish. The standing crop of bottom fauna of two fertilized and two unfertilized ponds was measured and compared, and the investigation showed that fertilization favors the production of organisms used as fish food.

The Life History of the Walleye, Stizostedion vitreum vitreum (Mitchill), in Michigan. Paul H. Eschmeyer. Bulletin of the Institute for Fisheries Research No. 3. Michigan Department of Conservation, Fish and Fisheries Division, Institute for Fisheries Research, Ann Arbor, Michigan, U.S.A., June 1950. 99 pp., illus. In English.

This bulletin presents the results of research on the life history and management of the walleye, one of the principal food and game fishes in Michigan. It includes information on waters studied, spawning grounds, spawning behavior, spawning season, spawning ground sex ratio, movement during and after spawning season, size distribution, identification of sex and development of reproductive organs, fecundity, eggs on the spawning grounds, behavior of young, food, growth, and migration.

Praxis der Aufzucht von Forellenbesatzmaterial (Rearing of Trout Stocks). Reinhard Demoll and Paul Steinmann. E. Schweizerbart'sche Verlagsbuchhandlung (Erwin Nägele), Stuttgart, Germany, 1949. 98 pp., illus. In German.

The Salmonidae, especially the trouts, are described, with special attention being given to their feeding at different developmental stages. The book deals in detail with artificial rearing, including the suitability of hatchery water and effect of its temperature, hatchery equipment, losses in hatching and their causes. There are separate chapters on planting fry and fingerlings in rearing ponds and natural waters, enemies encountered, diseases of young trout, and tables and formulas (e.g., for disinfection of equipment, ponds).

Larvae of Eastern American Lampreys I - Species with Two Dorsal Fins. Vadim D. Vladykov. Contribution, No. 29. Province of Quebec, Department of Fisheries, Quebec, Quebec, Canada, 1950. 26 pp., 13 figs. In English.

This deals with the identification of three species of Eastern North American lampreys, each of which has two distinct dorsal fins, Petromyson maruns, Entosphenus lamottenii, and Lampetra aepyptera. Species at various stages of development were examined as well as live specimens in aquaria. The investigation determined the main characters which can be used for identification of the three species.

The Frog Industry. William L. Hannaca. Specialties House, Whiting, Indiana, U.S.A., 1949. 117 pp., illus. In English.

A revised and enlarged edition of practical instruction for the beginner and for the advanced frog raiser, this book contains information on the biology of the frog; a description of North American species and those of other countries; frog farming methods; production of frog food; feeding methods; dressing, packing, and marketing; uses for frogs' skins; recipes for frog meat; and other information including a glossary of terms.

Notas sobre Otolitos de Peces Procedentes de las Costas del Sahara (Notes on Fish Otoliths from the Saharan Coast). Josefa Sanz-Echeverria. Boletín del Instituto Español de Oceanografía, No. 27. Madrid, Spain, 1950. 18 pp., 3 plates, bibliog. In Spanish.

This is the second part of a study of fish otoliths collected during the expeditions of the Spanish Institute of Oceanography along the Saharan coast. Here, the otoliths of Scomberemorus maculatus, Lichia vadiga, and Parapristipoma mediterraneum are described for the first time. Additional data on the otoliths of Pomatomus saltatrix, Epinephelus aeneus, E. gigas, Umbrina ronchus, and Sciaena aquila are given.

This Business of Boating. Elwell B. Thomas. Cornell Maritime Press, Cambridge, Maryland, U.S.A., 1949. 310 pp., illus. In English.

Captain Thomas has spent his entire adult life operating a medium-sized boat-building business. Since 1931 he has been writing articles on fishing vessel maintenance for the Atlantic Fisherman. This is one of the first books to tell of the inside workings in a boatyard from an economical point of view. There are many drawings and photographs showing layouts of building ways, marine railways, docks, floats, pile driving equipment, and all of the physical properties necessary for the small and medium-sized yard.

Tioriya in Raschet Orudii Rybalovstva (The Theory and Calculations in Design of Fishing Gear). F. I. Baranov. Moscow, 1948. 435 pp., illus. In Russian.

Used in the School of Fisheries in Moscow, this textbook includes chapters on fibers, cordage and ropes, lines of strain operating in gear, principal calculations in designing gear, design of hooks and nets, theory of using gill nets, stationary and floating seines, pound nets, cast nets, seines for pelagic fishing, nets for bottom fishing, and trawls.

Fishing in Many Waters. James Hornell. Cambridge University Press, London and New York, 1950. 207 pp., 44 text figs., 36 plates. In English.

This posthumously-published book is a well-illustrated account of fishing methods in many parts of the world, especially India, Ceylon, the Far East, and the South Seas, of which the author had personal knowledge. Some of the chapters cover primitive fishing methods by spear, bow, and harpoon; fishing with trained animals; kite fishing; shark fishing, also bonito and tuna fishing; fishing for flying-fish, octopus, cuttlefish, and squid; trap fishing; eel fishing and farming; poison fishing; and pearl fishing.

Food Industries Manual. 16th edition. Leonard Hill Ltd., 17 Stratford Place, London, W. 1, England, 1949. 1127 pp., illus., tables. In English.

Arranged like an encyclopedia, this manual has special chapters on canning and preservation, dehydration, storage and refrigeration, packaging, boiler house operations, and composition of food. It also has a list of suppliers of products for the food processing industry in the United Kingdom.

Konserventechnisches Taschenbuch (Food Technology Handbook). Hermann Serger and Hans Krause. 2nd edition. Dr. Serger and Hempel, Braunschweig, Germany, 1950. 816 pp. In German.

This handbook contains information on the manufacture of cans and notes on the various (auxiliary) chemicals used in preservation in food plants, etc. It gives some details on the preservation of various food products, including a 16-page chapter on fisheries products; describes the examination of cans and the inspection of canned foods; and quotes German laws and regulations pertaining to canned food.

Kühlhausbau (Construction of Cold Storage Warehouses). Part I. R. Plank (Editor). Vorträge auf der Kältetagung Cuxhaven 1949. Verlag C. F. Müller, Karlsruhe, Germany, 1950. 35 pp., illus. In German.

This is part I of a series of papers read at the 1949 refrigeration meeting at Cuxhaven, Germany. It contains six papers on problems in design and construction of cold storage warehouses, transportation problems inside the warehouses, measures to prevent freezing of the foundation subsoil, measures to prevent odors in cold rooms, and selection and installation of cold air circulation systems.

UNITS

Weight, volume, capacity, length, and area are expressed in metric units. "Tons" and "quintals," when not qualified, therefore mean "metric tons" (1,000 kilograms) and "metric quintals" (100 kilograms), respectively.

The term "dollars," unless otherwise specified, refers to U.S. dollars.

CONVERSION FACTORS

Converted from:	To:	Multiplier
General		
Pounds	Metric tons	0.0004536
Hundredweight (112 pounds)	" "	0.050802
Hundredweight (100 pounds)	" "	0.04536
Quintal (112 pounds)	" "	0.050802
Short ton (2,000 pounds)	" "	0.9072
Long ton (2,240 pounds)	" "	1.0161
U.S. gallons	Liters	3.7853
Imperial gallons	"	4.546
Fisheries products		
Hectoliter (herring or oil)	Metric tons	0.093
Wet-salted cod and allied species	Dried basis	0.66

SYMBOLS

... Not available

ø Negligible (less than half the unit used)

- Nil

Other FAO Fisheries Publications

YEARBOOK OF FISHERIES STATISTICS - 1947

Bilingual, English and French, with Preface in Spanish. August 1948. Photo-offset. 368 pp. Price US$4.00 or the equivalent. 1948-49 Yearbook will be available shortly.

Part I of this volume consists of 143 statistical tables on the import and export trade of 61 countries in fish and fisheries products since 1930. Part II contains 86 tables on (a) landings and (b) miscellaneous subjects such as the number of fishermen, craft, etc., for about 20 countries.

SALTED COD AND RELATED SPECIES

FAO Fisheries Study No. 1, English edition published in July 1949, Washington, D.C. Printed xii + 196 pp. French and Spanish editions in press. Price US$2.00 or the equivalent.

A comprehensive study of the factors influencing production and trade of salted cod and related species during the inter-war period, and an analysis of present problems of the salted cod industry. 67 pages of statistical tables.

WORLD FISHERIES ABSTRACTS

Beginning with the January-February issue

A bimonthly review of the technical literature on fishing and the fishing industry. The abstracts are prepared and arranged for card filing.